REMARKS

Summary of the Examiner's action in the last response

The Drawings were objected to as failing to comply with 37 CFR 1.84(p)(5) for including reference characters not mentioned in the description.

The Specification was objected to and the Office Action also reminded Applicant of the proper language and format for the abstract.

Claims 1-3, 6-9, 12-14 and 17-19 were rejected under 35 USC 112, first paragraph.

Claims 1, 2, 6, 9, 12, 13, 17 and 19 were rejected under 35 102(b) in view of Maghon et al. (DE 3625056 A1).

The Office Action indicated the information disclosure statement filed September 26, 2003 fails to comply with 37 CFR 1.98(a)(3) and the information contained therein was not considered because it does not include a concise explanation of the relevance.

The Office Action indicates prior art could not be applied to claims 3, 7, 8, 14, and 18 due to indefiniteness and a non-enabling disclosure.

Status of the claims in this response

Claims 1 and 12 have been amended to include the substantive limitations of canceled claim 7.

Claims 4, 5, 10, 11, 15, and 16 are withdrawn and have been cancelled herein.

Claims 1-3, 6-9, 12-14, and 17-19 are presented herein for examination.

The drawings have been corrected and replacement drawings submitted herein.

The Specification has been amended and a new Abstract submitted herein.

Response to Drawing Objections

Replacement drawing sheets 1-4 have been included with this response. In the drawings, elements 34, 36, 42, 44 and 45, which the Examiner indicated were not described in the Specification, have been deleted. The drawings were reviewed and where appropriate, additional elements not disclosed in the Specification were removed from the drawings.

Coolant channel 12 of rail element 6 has been added to Figure 4. Note, original claim 12 includes reference to coolant channel 12 of rail element 6.

An explanation of reference numeral 10, as shown in Figures 3 and 4, has been added to the Specification.

Reference numbers 6, 10, and 8 have been added to Figure 2 to indicate the arrangement of the rail element (6) and its liner-like lugs (10) and also the fixing device (8). Reference number 8 replaces previous reference number 10 in the original Figure 2, reference number 6 replaces one previous reference number 46 in the original Figure 2, and new reference number 10 replaces another previous reference number 46 in the original Figure 2.

The reference numbers 5, 11, and 7 in Figure 2 which were not properly pointing to the correct elements have been deleted.

Contrary, to the Examiner's assertion in the Office Action, numeral 15 is disclosed at page 5, line 33 and therefore has not been deleted from the drawings.

With regards to the Examiners objections requiring the drawings show every feature of the invention specified in the claims

With regards to the claim 1 (rail elements pointing outward), an explanation of how the drawings show the rail elements extending outward is discussed below in context with the Examiner's 35 USC 112 rejection and question asking which direction is "outward".

With regards to claims 3 and 14, note Figure 3 includes a fixing element 8 which applicant believes reasonably represents a screw and is shown in such a way as to indicate the fixing element 8 is inserted into the openings 17 of the rail element 6 in a manner which can reasonable encompass screwing the fixing element into the opening.

With regards to claims 8 and 18, an explanation of the closed circuit cooling arrangement/means as shown in the drawings is provided below in applicant's response to the 35 USC 112 rejections.

Response to Specification Objection

In regards to the Abstract, a new abstract is submitted herein. The new abstract is 150 words or less in length. Please cancel the previous abstract.

In regards to amendments to the Specification main body, a paragraph has been inserted which describes the liner-like lug elements as shown in the drawings. No new matter is entered.

Response to 35 USC 112 rejections

Liner elements "elastically fixed" to the combustion chamber casing

The Examiner asks "Which of the structural elements is 'elastic' in order for the liner elements to be "elastically fixed" to the combustion chamber casing?"

The specification discloses the fixing devices 8 are implemented for elastic longitudinal extension. At page 6, lines 6-9, the Specification discloses that "For fixing purposes the rail element 6 has openings 17 through which a fixing device 8 can be introduced via which the rail element 6 is elastically secured to the casing 7 of the combustion chamber 1." Where the liner elements 5 are attached to the rail element 6,

and the rail element 6, is in-turn, elastically attached to the casing 7 of the combustion chamber 1, the liner elements 5 are thereby elastically fixed to the combustion chamber 1 via the fixing device 8 which is elastically secured to the chamber casing 7, see also Figure 3.

Closed-circuit cooling arrangement and explanation of how the liner elements are understood to be secured to casing

The Examiner asserts "There is no description of a closed-circuit cooling arrangement" and asks how do the liner like lugs secure the liner elements to the casing?

The liner elements help effectuate the closed-circuit cooling arrangement therefore these issues are address together. Essentially, cooling air flow is not free to travel outside of defined pathways and therefore follows a closed-circuit cooling arrangement.

Applicant has amended the drawings and corrected improper reference number designations in the Specification to more clearly describe the "closed-circuit cooling arrangement", which is presented in the claims as closed-circuit cooling means for cooling the combustion chamber liner using coolant chambers.

At page 6, line 15 – page 7, line 3 applicant discloses a closed-circuit cooling arrangement which includes rail element 6, liner elements 5, cooling sections 18, fixing sections 19, coolant openings 11, and channels 12, 20, and 13, also see generally Figures 2-4. The drawings have been corrected to show that rail element 6 includes fixing section 19 (for attaching the rail element 6 to the liner elements 5), and a cooling section 18 (for facilitating the closed circuit cooling arrangement) as well as rail element coolant channel 12 – (which previously was not indicated on the drawings). The rail element 6 further includes coolant openings 11 in fluid connection with the liner element 5 (see Figure 4). Cooling air enters the rail element 6 at the coolant opening 11, flows from the rail element channel 12 to liner element channel 20 at the edge of liner element 5 and eventually into liner element channel 13.

To provide the fluid connection between the rail element 6 and the liner element coolant channel 13, the rail element 6 has liner-like lugs 10 wherein the liner element 5

abuts against the liner-like lugs 10 of the rail element 6 and the liner element 5 is sealed to the rail element 6 using the sealing element 16. The lugs 10 extend from and are part of the rail element 6 which is itself attached to the combustion chamber casing 7, see Figure 2. This series of attachments provides the connection between the liner elements 5 and the combustion chamber casing 7.

The lugs 10, shown as areas protruding from the rail element 6, alternate with gaps in the rail element 6 and these gaps form the coolant channel 12 of the rail element 6, specifically, see Figures 3 and 4 of the replacement drawings.

The areas where the liner element 5 abuts the rail elements 6 at the liner-like lugs 10 have limited air flow, however at the rail element coolant channel 12 areas air can flow from the openings 11 in the rail element 6 to edge of the liner element 5 at channel 20 and from there to channel 13 of the liner element 5.

This arrangement allows for fluid communication of the cooling air flow between rail element 6 and the liner element 5 because air which enters the openings 11 of the rail element 6, can freely flow to the coolant channel 13 of liner element 5 via coolant channels 12, and 20.

The combustion chamber of the instant invention is presented as having a closed-circuit means/arrangement because the air which cools the combustion chamber via the rail element and the liner elements, along with their designated air flow channel elements, direct the air though a specified and sealed path as explained above. Cooling air flow is not free to travel outside of the defined pathways and therefore follows a closed-circuit cooling arrangement.

Liner element supported by the rail elements

The Examiner states "it is not possible to ascertain the structural connection between the liner elements and the rail elements" and asks "How are the liner elements supported by the rail elements?"

At page 6, lines 11-13 of the Specification applicant discloses "A sealing element 16 is provided in each case to form a seal between the rail element 6 and the liner element 5", see also Figure 4. The attachment between the rail element and the liner element is

disclosed and shown where the sealing element 16 connects the rail and liner elements together.

Unidentified pieces shown in the drawings

The Examiners asks what is represented by the unidentified pieces shown in the lower right corners of Figures 3 and 4.

Applicant has removed these items from the drawings.

35 USC 112, second paragraph rejections

As suggested by the Examiner, a thorough revision of the claims has been conducted to render them definite in form according to the statute. The drawings and Specification, as amended, should aid the Examiner in understanding the instant invention and in appreciating its non-obviousness and uniqueness.

Most of the issues raised by The Examiner have been resolved by applicant's amending the applicable claims, drawings, or Specification. Additionally, the Examiner asks several questions which applicant has further addressed below.

The Examiner asks:

"what structure does the 'combustion chamber side' refer?"

The combustion chamber side refers to the side of the rail element which faces into the combustion chamber cavity rather than the side which is attached to the combustion chamber casing 7. As indicated at page 6, lines 26-27, and in Figure 3, coating 9 of the rail element 6 is shown and disclosed as being positioned on the combustion chamber side of the rail element 6.

With regard to claims 1 and 12, last phrase, "which direction is the outward direction?"

Where the rail element 6 extends to contact the adjacent liner elements 5, that extension is understood to be outward since the liner elements 5 are disposed flanking the rail element 6, as shown in Figures 3 and 4.

"to what structure is the liner element secured?"

The liner element 5 is sealed (and thus secured) against the rail element 6 as discussed above.

"what is the structural meaning of "liner-like" with respect to "liner-like lugs"

The "liner-like" phrase means the lugs of the rail element 6 are designed to be mated with the liner element 5. Reference number 10 presents the liner-like lugs. The structure of the "liner-like lugs" is shown in Figures 1-4 of the corrected drawings at reference number 10 as is further explained in the amendment to the Specification submitted herein to more clearly distinguish the liner-like lugs as shown in the drawings and the drawings have been corrected to provide the proper reference numbers for the liner-like lugs 10. No new matter has been added to the Specification or the drawings.

"what structure forms the "openings" of claim 7

The openings referred to are rail element 6 openings 11 as shown in Figure 4.

Response to 35 USC 102 rejection

Amended claims 1 and 12 present more specific features of the rail elements to emphasize that the instant invention provides enhanced cooling air flow between the rail element and the liner element because air which enters the openings of the rail element, can freely flow to the coolant channels of the liner elements via coolant channels in the rail element.

The applied reference Maghon et al. fails to disclose elements which allow air flow between the rail element and the liner element. Specifically, Maghon et al does not provide channels for coolant air to flow across the liner element, whereas the both the rail elements and the liner elements of the instant invention include coolant channels in fluid communication with each other. These coolant channels facilitate enhanced cooling air flow around the combustion chamber. The additional air flow reduces the thermal load at the walls of the combustion chamber thereby increasing the service life of the combustion

system. The enhanced cooling air flow of the instant invention further provides a closed-circuit cooling arrangement providing optimum use/reuse and control of the air flowing through the combustion cooling system.

Applicant submits the amended claims, corrected drawings, and amended Specification are in condition to allow examination of claims 1-3, 6-9, 12-14, and 17-19 presented herein for examination, including claims not previously examined. No new matter has been added to the drawings or Specification.

Conclusion

Applicant respectfully requests allowance of the present application in view of the foregoing arguments and amendments. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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